

## CLAIMS

What is claimed is:

1. An optical signal receiving equipment, comprising:
  - an optical-electrical converting means for converting received optical signals into electronic signals;
  - a plurality of deciders for identifying the electronic signals converted by the optical-electrical converting means;
  - a soft decision-identification means for computing identification signals related to the results of identification by the plurality of deciders, and
  - reliability information indicating a level of reliability of the identification signals;
  - an error correction means for correcting error in the identification signals, by using the reliability information computed by the soft decision-identification means; and
- 15 a control means for executing hard decision-identification of the electronic signals by using each of the plurality of deciders, and for correcting, based on each of the hard decision-identification results, thresholds in the plurality of deciders in the soft decision-identification means.

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2. An optical signal receiving equipment as recited in claim 1, wherein the control means, in executing hard decision-identification of the electronic signals by using each of the plurality of deciders, corrects the

thresholds—in the plurality of deciders in the soft decision-identification means—based on results of correcting errors in identification signals related to each of the hard decision-identification results.

5           3. An optical signal receiving equipment as recited in claim 1,  
wherein following correction of the thresholds in the plurality of deciders,  
the control means further corrects, based on electronic signal identification  
results made by the plurality of deciders having undergone correction, the  
thresholds in the plurality of deciders in the soft decision-identification  
means.  
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4. An optical signal receiving equipment as recited in claim 1, further comprising:

15           a hard decision-decider capable of executing hard  
decision-identification of the electronic signals, independently from the soft  
decision-identification means; wherein  
                the control means executes the hard decision-identification of the  
electronic signals by using the hard decision-decider, and corrects, based on  
the variation over time in the hard decision-identification results,  
20           thresholds in the plurality of deciders in the soft decision-identification  
means.

5. An optical signal receiving equipment, comprising:

- an optical-electrical converting means for converting received optical signals into electronic signals;
- a plurality of deciders for identifying the electronic signals converted by the optical-electrical converting means;
- 5       a soft decision-identification means for computing identification signals related to the results of identification by the plurality of deciders, and reliability information indicating a level of reliability of the identification signals;
- an error correction means for correcting error in the identification
- 10      signals, by using the reliability information computed by the soft decision-identification means; and
- a control means for selecting, based on electronic signal identification results made by the plurality of deciders, an decider to be operated among the plurality of deciders in the soft decision-identification means.
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6. An optical signal receiving equipment, comprising:
- an optical-electrical converting means for converting received optical signals into electronic signals;
- a plurality of deciders for identifying the electronic signals converted by
- 20      the optical-electrical converting means;
- a soft decision-identification means for computing identification signals related to the results of identification by the plurality of deciders, and reliability information indicating a level of reliability of the identification

signals;

an error correction means for correcting error in the identification signals, by using the reliability information computed by the soft decision-identification means; and

- 5 a control means for selecting, based on control information inputted from outside, an decider to be operated among the plurality of deciders in the soft decision-identification means.

7. An optical signal receiving equipment, comprising:

- 10 an optical-electrical converting means for converting received optical signals into electronic signals;
- a plurality of deciders for identifying the electronic signals converted by the optical-electrical converting means;
- a soft decision-identification means for computing identification signals related to the results of identification by the plurality of deciders, and reliability information indicating a level of reliability of the identification signals;
- 15 an error correction means for correcting error in the identification signals, by using the reliability information computed by the soft decision-identification means; and
- 20 a control means for executing hard decision-identification of the electronic signals in any one of the plurality of deciders, for measuring, based on the hard decision identification results, the average amplitude of

the electronic signals, and for correcting, based on the variation over time in the measured average amplitude, thresholds in the plurality of deciders in the soft decision-identification means.

- 5        8. An optical signal receiving equipment, comprising:
  - an optical-electrical converting means for converting received optical signals into electronic signals;
  - a plurality of deciders for identifying the electronic signals converted by the optical-electrical converting means;
- 10      a soft decision-identification means for computing identification signals related to the results of identification by the plurality of deciders, and reliability information indicating a level of reliability of the identification signals;
  - an error correction means for correcting error in the identification signals, by using the reliability information computed by the soft decision-identification means;
  - a hard decision-decider capable of executing hard decision-identification of the electronic signals, independently from the soft decision-identification means; and
- 15      a control means for executing the hard decision-identification of the electronic signals by using the hard decision-decider, for measuring, based on the hard decision-identification results, the average amplitude of the electronic signals, and for correcting, based on the variation over time in the

measured average amplitude, thresholds in the plurality of deciders in the soft decision-identification means.

9. An optical signal receiving equipment as recited in claim 1, further  
5 comprising:

a hard decision-decider capable of executing hard decision-identification of the electronic signals, independently from the soft decision-identification means; wherein

the control means executes the hard decision-identification of the  
10 electronic signals by using each of the plurality of deciders and the hard decision-decider, compares each of the hard decision-identification results of the plurality of deciders with the hard decision-identification result of the hard decision-decider, and corrects, based on the variation over time in the comparison results, thresholds in the plurality of deciders in the soft  
15 decision-identification means.

10. An optical signal receiving method, comprising:

a step of converting received optical signals into electronic signals;  
a step of executing hard decision-identification of the electronic signals  
20 converted in the optical-electrical converting step by using an decider; and  
a step of measuring, based on the hard decision-identification results,  
the average amplitude of the electronic signals.